

AMENDMENTS TO THE SPECIFICATION:

Please replace the paragraph beginning on page 3, line 11 of the specification with the following amended paragraph:

The present invention provides a method and apparatus for redundant image encoding and decoding, in which, by using a slice structure used for image encoding to redundantly encode and decode part of an image ~~is redundantly encoded and decoded~~, a high encoding efficiency is maintained, and robustness with respect to errors is improved by considering both an error occurrence rate and a redundantly-encoded bit number regardless of the size of the slice.

Please replace the paragraph beginning on page 8, line 21 of the specification with the following amended paragraph:

When regions at certain positions of an image are redundantly encoded, the regions are redundantly encoded as ~~many as the~~ a number of macroblocks predetermined according to a redundantly-encoded amount in a predetermined order, for example, in the order of macroblock addresses. When the slice structure composed of a series of macroblocks is used, the regions can be redundantly encoded as ~~many as the~~ a number of a series of macroblocks predetermined according to a redundantly-encoded amount in a predetermined order, for example, downwardly.

Please replace the paragraph beginning on page 9, line 4 of the specification with the following amended paragraph:

When the predetermined region is redundantly encoded, the portion where motions are actively performed is redundantly encoded, and thus, errors can be reduced by error concealment of a region where motions are actively performed. In this case, the region where motions are actively performed is set based on the size of a motion vector used for motion compensation, or the sum of absolute difference (SAD) between a previous image region and a current image region referred to the motion vector, and the region can be set to a redundant image encoding region.

Please replace the paragraph beginning on page 10, line 1 of the specification with the following amended paragraph:

The slice encoding unit 140 encodes the inputted image in units of slices. For this purpose, the slice header encoding portion 142 encodes common information used to encode a macroblock in a slice according to the header information inputted by the picture header encoding unit 130 (S170). If all the macroblocks in the slice is are redundantly encoded, information which indicates that a corresponding slice includes only redundant encoded information, can be encoded at the slice header.

Please replace the paragraph beginning on page 10, line 15 of the specification with the following amended paragraph:

Image data in units of slices inputted from the transform encoding and quantization portion 146 is ~~entropy-encoded~~ entropy-encoded and generated by the

entropy-encoding portion 148 as a final bitstream using a predetermined entropy-encoding method (S180).

Please replace the paragraph beginning on page 12, line 3 of the specification with the following amended paragraph:

The slice decoding unit 220 decodes an image in units of slices by referring to the inputted picture header information. ~~The~~ First, the entropy-decoding portion 222 entropy-decodes the inputted bitstream, ~~first,~~ decodes a slice header, and uses the decoded information to decode all macroblocks in the slice. After that, the entropy-decoding portion 222 outputs the image data in units of the entropy-decoded slices to the inverse-quantization and inverse-transform portion 224 (S270). If a flag which indicates that a corresponding slice is composed of only redundant information[[.]] is set in the slice header, redundantly-encoded slices are not decoded ~~in case that~~ when errors do not occur in other decoded slices. However, when errors occur in decoded slices, errors are restored by decoding redundantly-encoded slices. If a slice is composed of only specific information, i.e., important information such as a macroblock header, a motion vector, a discrete cosine (DC) coefficient contained in a discrete cosine transform (DCT) coefficient, an image is restored with the information.

Please replace the paragraph beginning on page 13, line 3 of the specification with the following amended paragraph:

When an image is encoded, a slice structure suitable for a user's environment among a variety of slice structures is selected by the slice structure modeling unit

100 shown in FIG. 1A. When a simple slice structure is required, ~~for reasons that for~~
example, because the user's terminal performance is restricted[[,]] or because a
transmission environment of ~~no-much~~ few errors and wide bandwidth is used, a slice
composed in units of a series of macroblocks is used.

Please replace the paragraph beginning on page 14, line 10 of the
specification with the following amended paragraph:

FIG. 4 illustrates an example of a method for redundant image encoding using
additional rectangular slices. A slice having all possible structures may be used in a
region excluding the additional rectangular slices shown in FIG. 4. ~~The~~ In one
embodiment, the rectangular slices include the ROI-especially, such that the ROI is
robust with respect to errors and subjective picture quality of the ROI can be
improved.

Please replace the paragraph beginning on page 14, line 15 of the
specification with the following amended paragraph:

FIGS. 5A and 5B illustrate examples of a method for redundant image
encoding in a case where rectangular slices are overlapped with each other. The
structure shown in FIGS. 5A and 5B is used in an FMO mode 2, which is a
~~recommendable-proposal~~ recommendation proposed by a Joint Video Team (JVT)
final committee. This method is a technique ~~that~~ in which an image is divided into
rectangular regions (ROI) and ~~the other~~ another region (e.g., a background region)
and each region is encoded as slices. FIG. 5A illustrates a case where for two
different rectangular regions, neither region completely includes the ~~do-not-include~~

~~each other and their region but~~ part is of each of the regions are overlapped on each other, and FIG. 5B illustrates a case where one rectangular region completely includes another rectangular region and is overlapped on each other. In the two cases, a the portion where rectangular regions are overlapped on each other is redundantly encoded. ~~The~~ In one embodiment, the overlapped portion includes the ROI-especially, such that the ROI is robust with respect to errors and subjective picture quality of the ROI can be improved. When the rectangular slice structure is used, the rectangular regions can be independently encoded, and thus may be used as a separate ~~image~~ images. That is, a picture-in-picture (PIP) scheme can be supported, and using redundant image encoding, a PIP which indicates a variety of positions[[,]] can be supported in FIG. 5A, and a PIP having a variety of sizes can be supported in FIG. 5B.

Please replace the paragraph beginning on page 18, line 19 of the specification with the following amended paragraph:

As described above, in a method and apparatus for redundant image encoding and decoding to improve error robustness according to the present invention, regions indicated by slices are overlapped on each other when an image is encoded in units of slices, and an overlapped portion is redundantly encoded such that robustness with errors can be achieved ~~when~~ during transmission via a network.